Electronic Version
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Claims

[c1] What is claimed is:

1. A magnetic field generator assembly comprising:
a plurality of magnetic elements configured to collectively generate a magnetic field sufficient for diagnostic data acquisition; and
a non-magnetizable pane operationally connected to limit separation of one magnetic element from another magnetic element.

[c2] 2. The magnetic field generator assembly of claim 1 wherein the non-magnetizable pane has a thickness of less than 0.1 mm.

[c3] 3. The magnetic field generator assembly of claim 1 wherein the non-magnetizable pane is adhesively secured to the plurality of magnetic elements.

[c4] 4. The magnetic field generator assembly of claim 1 wherein the non-magnetizable pane includes nylon.

[c5] 5. The magnetic field generator assembly of claim 1 further comprising a permanent material block secured to a collective surface of the plurality of magnetic elements opposite that of the non-magnetizable pane.

[c6] 6. The magnetic field generator assembly of claim 1 wherein each of the magnetic elements has a thickness of less than 0.6 mm.

[c7] 7. The magnetic field generator assembly of claim 1 wherein the plurality of magnetic elements are adhesively secured together.

[c8] 8. The magnetic field generator assembly of claim 1 wherein the plurality of magnetic elements includes at least one of Silicon Iron (SiFe), neodymium iron boron (NdFeB), samarium Cobalt (SmCo), and Aluminum Nickel-Cobalt-Iron Cobalt (AlNiCo).

[c9] 9. A magnetic resonance imaging (MRI) apparatus comprising:
a magnetic assembly having a bore therethrough;
a plurality of gradient coils positioned about the bore of a magnet assembly to impress a polarizing magnetic field;
an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR data; and
wherein the magnetic assembly includes:
at least one multi-element magnet; and
at least one non-magnetizable sheet connected to the at

least one multi-element magnet.

[c10] 10. The apparatus of claim 9 wherein the at least one non-magnetizable sheet is adhesively secured to the at least one multi-element magnet.

[c11] 11. The apparatus of claim 9 further comprising at least one permanent material block and wherein the at least one multi-element magnet is secured to the at least one permanent material block.

[c12] 12. The apparatus of claim 9 wherein the magnetic assembly further includes a pair of multi-element magnets and a pair of non-magnetizable sheets wherein each non-magnetizable sheet is positioned to secure one of the pair of multi-element magnets.

[c13] 13. The apparatus of claim 9 wherein each non-magnetizable sheet has a thickness of approximately 0.1 mm.

[c14] 14. The apparatus of claim 9 wherein each non-magnetizable sheet includes nylon, and the non-magnetizable sheet covers a top surface of a respective multi-element magnet.

[c15] 15. The apparatus of claim 9 wherein the non-magnetizable sheet forms element retention netting to

limit deterioration of a respective multi-element magnet.

[c16] 16. A method of manufacturing a magnet elements assembly for an MRI apparatus comprising the steps of:
assembling a plurality of magnetic to form a multi-element magnet; and
securing a non-magnetizable element-retention sheet to the multi-element magnet so as to reduce element breakaway.

[c17] 17. The method of claim 16 further comprising the step of bonding the non-magnetizable sheet to the multi-element magnet.

[c18] 18. The method of claim 17 wherein bonding includes gluing.

[c19] 19. The method of claim 16 wherein the step of assembling the plurality of magnetic elements includes bonding the magnetic elements to one another.

[c20] 20. The method of claim 16 further comprising the step of attaching the multi-element magnet to a permanent material block.

[c21] 21. The method of claim 20 further comprising the step of attaching the permanent material block to a yoke secured by a pair of posts.

[c22] 22. The method of claim 21 further comprising the step of arranging the multi-element magnet, the permanent material block, the yoke, and the pair of posts to form at least a portion of a magnetic bore of an MRI apparatus.